

I claim:

1. A bumper system comprising:
a tubular bumper beam;
a hitch-supporting bracket having an inverted section shaped to fit downwardly onto the tubular bumper beam, and further having a laterally-extending second section; and
a hitch support tube secured to the laterally-extending second section and having a hole therein, the second section being shaped to support a ball hitch for hauling a trailer.
2. The bumper system defined in claim 1, wherein the inverted section is U-shaped and shaped to straddle the bumper beam.
3. The bumper system defined in claim 2, wherein the second section includes a panel that extends horizontally when in a vehicle-mounted position.
4. The bumper system defined in claim 3, wherein the inverted section includes a long leg that extends downwardly below a height of the panel, and further the hitch support tube is fixedly supported under the panel.
5. The bumper system defined in claim 4, wherein the long leg includes a lip at its lower free end, and wherein the hitch support tube includes an end resting on the lip.
6. The bumper system defined in claim 5, wherein the end of the hitch support tube extends through an aperture in the long leg, and including a retainer that extends through the end on a back side of the long leg for retaining the hitch support tube to the bracket despite substantial towing forces acting on the hitch support tube.
7. The bumper system defined in claim 6, wherein the panel and the hitch support tube include aligned holes shaped to receive a stem of a ball hitch.

8. The bumper system defined in claim 6, including a support bracket positioned under the hitch-supporting bracket and engaging the long leg and the panel, the support bracket being shaped to support the panel in a horizontal orientation relative to the hitch-supporting bracket and including holes shaped to provide an attachment point of sufficient strength to engage and support a safety chain.

9. The bumper system defined in claim 1, including an energy absorber that substantially covers the beam and hitch-supporting bracket, and that extends outboard of ends of the beam.

10. The bumper system defined in claim 1, wherein the bumper beam that includes a center section, end sections, and bent interconnecting sections that interconnect each end section with an end of the center section, the center section being at least 25% of a length of the bumper beam and defining a longitudinal primary centerline, and the end sections being at least 15% of the length and each defining a secondary centerline that extends parallel the primary centerline.

11. The bumper system defined in claim 1, including an energy absorber positioned on a face of the bumper beam, with at least a portion of the hitch-supporting bracket being located under a center of the energy absorber.

12. A bumper system for a vehicle, comprising:

a tubular bumper beam includes a center section, end sections, and bent interconnecting sections that interconnect each end section with an end of the center section, the center section being at least 25% of a length of the bumper beam and defining a longitudinal primary centerline, and the end sections being at least 15% of the length and each defining a secondary centerline that extends parallel the primary centerline;

an energy absorber with at least one rear recess shaped to receive a portion of the tubular bumper beam; and

mounts adapted for attachment to a vehicle and that are attached to the end sections, the secondary centerline being spaced horizontally from the primary centerline when in a vehicle-mounted position.

13. The bumper system defined in claim 12, wherein the center section is located partially between the mounts and farther from the passenger compartment than the end sections.

14. A bumper system for a vehicle comprising:

a beam having a face and having mounts adapted for mounting to a vehicle frame; and

an energy absorber engaging the face and having end sections located outboard of ends of the beam, the energy absorber being made of a structural engineering polymeric material and the end sections having flat top surfaces for forming steps outboard of the ends of the beam.

15. The bumper system defined in claim 14, wherein the beam comprises a tubular beam.

16. A bumper system for a vehicle comprising:

a beam having a face and having mounting structures adapted for mounting to a vehicle frame; and

an energy absorber engaging the face and made of a structural engineering polymeric material, the energy absorber including a honeycomb structure for absorbing energy upon a vehicle impact, and further including accessory-mounting structures for mounting and supporting accessories on the energy absorber.

17. The bumper system defined in claim 16, wherein the accessory-mounting structures include an integrally-formed molded-in structure shaped and adapted to house and retain an electrical accessory.

18. The bumper system defined in claim 17, including an electrical connector attached to the molded-in structure.

19. The bumper system defined in claim 18, including a bracket attached to and supported by the beam and forming a step.

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20. The bumper system defined in claim 16, wherein the energy absorber includes end sections that extend outboard of ends of the beam, the end sections having a flat top surface and being structural such that the end sections form steps located outboard of the ends of the beam.

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21. A bumper system for a vehicle comprising:

an elongated reinforcement beam having a face and having opposing end sections adapted for attachment to mounts on a vehicle frame to support the bumper system; and

5 an energy absorber made of a structural engineering polymeric material for absorbing impact forces against the beam during a collision, the energy absorber including corner-forming sections extending outwardly from the end sections of the beam in cantilever, the corner-forming sections including top surfaces forming steps at opposite corners of the vehicle for supporting a person while being stepped upon by the person.

22. The bumper system defined in claim 21, including a hitch support structure mounted to the beam in a central location for supporting a trailer hitch; and the energy absorber including a center section constructed to provide access to the hitch support structure.

23. The bumper system defined in claim 22, wherein the hitch support structure includes a hitch-supporting bracket shaped to downwardly engage the beam.

24. The bumper system defined in claim 23, wherein the hitch support structure includes a hitch support tube supported by the hitch-supporting bracket.

25. The bumper system defined in claim 21, wherein the top surfaces of the corner-forming sections are relatively flat and define a horizontal plane.